99 E 117

Proposal Title: Development of a Research Program for the Invasive Aquatic Plant, *Egeria densa*
Applicant Name: California Department of Boating and Waterways
Mailing Address: 2000 Evergreen Street, Suite 100 Sacramento California 95815-3896
Telephone: (916) 263-8141
Fax: (916) 263-0649
Email: pthalken@dbw.ca.gov

Amount of funding requested: $4,000,000 for 3 years

Indicate the Topic for which you are applying (check only one box).

- ☐ Fish Passage/Fish Screens
- ☐ Habitat Restoration
- ☐ Local Watershed Stewardship
- ☐ Water Quality
- ☒ Introduced Species
- ☐ Fish Management/Hatchery
- ☐ Environmental Education

Does the proposal address a specified Focused Action? X Yes ___ No

What County or counties is the project located in? Sacramento, San Joaquin, and Contra Costa

Indicate the geographic area of your proposal (check only one box):

- ☐ Sacramento River Mainstream
- ☐ Sacramento Trib: _____
- ☐ San Joaquin River Mainstream
- ☐ San Joaquin Trib: _____
- ☒ Delta: Entire Delta
- ☐ East Side Trib: _____
- ☐ Suisun Marsh and Bay
- ☐ North Bay/South Bay: _____
- ☐ Landscape (entire Bay-Delta watershed)
- ☐ Other: _____

Indicate the primary species which the proposal addresses (check all that apply):

- ☐ San Joaquin and East-side Delta tributaries fall-run chinook salmon
- ☐ Winter-run chinook salmon
- ☐ Late-fall run chinook salmon
- ☐ Delta Smelt
- ☐ Splittail
- ☐ Green sturgeon
- ☐ Migratory birds
- ☐ Other: *Egeria densa*
- ☐ Spring-run chinook salmon
- ☐ Fall-run chinook salmon
- ☐ Longfin smelt
- ☐ Steelhead trout
- ☐ Striped bass
- ☐ All chinook species
- ☐ Other: _____

I-020249

Specify the ERP strategic objective and target (s) that the project addresses. Include page numbers from January 1999 version of ERP Volume I and II:
Objective: Aquatic Habitat Plant Community Group Volume I page 368-370, Volume II Target 1, Invasive Pants page 111

Indicate the type of applicant (check only one box):

- [x] State agency
- [ ] Public/Non-profit joint venture
- [ ] Local government/district
- [ ] University
- [ ] Federal agency
- [ ] Non-profit
- [ ] Private party
- [ ] Other: _____

Indicate the type of project (check only one box):

- [ ] Planning
- [ ] Monitoring
- [x] Research
- [ ] Implementation
- [ ] Education

By signing below, the applicant declares the following:

1.) The truthfulness of all representations in their proposal;

2.) The individual signing the form is entitled to submit the application on behalf of the applicant (if the applicant is an entity or organization); and

3.) The person submitting the application has read and understood the conflict of interest and confidentiality discussion in the PSP (Section 2.4) and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant, to the extent as provided in the Section.

PATRICK THALLER
Printed name of applicant

Signature of applicant

I-020250

Title of Project: **Development of a Research Program for the Invasive Aquatic Plant, Egeria densa**

Contact person:	Pat Thalken Dept. of Boating & Waterways 2000 Evergreen Street Sacramento, CA 95815-3896
Participants and collaborators:	California Department of Boating & Waterways Contracted Scientific Researchers
Type of Organization:	State agency
Tax Status:	ID # 94 - 6001347

99 E 117

Executive Summary

The primary objective of this project is to develop a research program to identify ecological requirements of the invasive aquatic nuisance weed *Egeria densa* including the environmental fate of chemicals proposed to control it.

The California Department of Boating and Waterways (DBW) has been legislatively mandated to establish a control program for the invasive aquatic weed *Egeria densa* in the Sacramento/San Joaquin Delta, its tributaries, and the Suisun Marsh (Assembly Bill 2193, Rainey, September 1996).

Egeria densa is a perennial freshwater aquatic herb in the waterweed family (Hydrocharitaceae). In California, Egeria occurs at less than 7000 feet elevation in the Sierra Nevada, Central Valley, Central Coast, San Francisco Bay and San Jacinto Mountains (Hickman 1993). It has been distributed via the aquarium trade to many parts of the world where it has escaped cultivation and become naturalized. Once naturalized, it can spread along existing watercourses into new suitable habitats without further human activity (Parsons 1992). Egeria's dense underwater growth seriously retards water flow, interfering with irrigation projects, hydroelectric utilities and urban water supplies. It may also slow vessel traffic and interfere with recreational and commercial activities such as boating, swimming and fishing. Egeria reduces the abundance and diversity of native plant seeds and this is probably accentuated by increased sediment accumulation beneath the weed beds (deWinton and Clayton 1996).

In 1997, DBW began conducting a series of studies including the Effects of Control Methods on the *Egeria densa* Community, Estimating Acreage and Percent Coverage in the Sacramento/San Joaquin Delta, Fishes Associated with *Egeria densa* in the Delta, Dissipation and Movement of Chemicals Following Applications for Control of *Egeria densa* in the Delta, Production and Viability of *Egeria densa* Fragments Following Mechanical Harvesting, and Environmental Monitoring for Chemical Control of *Egeria densa* in the Delta. These studies were conducted as part of an Environmental Impact Report being prepared by DBW.

Due to the demand to expedite the development of the program, the research results were based only on approximately a one year period.

The 1997 study estimating acreage and percent coverage in the Sacramento/San Joaquin Delta identified 4000 acres of Egeria infestation. The number represents five percent of the total acres of waterways in the Sacramento/San Joaquin Delta and Suisun Marsh.

The proposed control program currently being developed, is a chemical based control program with supplemental harvests. It is anticipated that the majority of chemical applications will be with the copper based product Komeen. Although all the herbicides studied are currently registered for use in aquatic environments in California by the United States Environmental Protection Agency and the California Department of Pesticide Regulation, their has been a desire by regulatory agencies and environmental groups to explore the long term ecological impacts of both the plant and the fate of

the chemicals proposed to control it.

The Department of Boating and Waterways is currently directly involved with other aquatic vegetation programs including DBW's Water Hyacinth Control Program and is a major funding source for the Department of Food and Agriculture's Hydrilla Eradication Program. The *Egeria densa* Task Force is composed of local, state, and federal agencies with interests in the Delta, including County Agricultural Commissioners, the Department of Water Resources, Department of Fish and Game, Department of Food and Agriculture, Water Resources Control Board and the Central Valley Regional Water Quality Control Board, Bureau of Reclamation and the Fish and Wildlife Service.

The Department of Boating and Waterways is seeking 4 million dollars to assist in the funding of studies to identify the ecological requirements of the invasive aquatic weed *Egeria densa*, and environmental fate of the chemicals proposed for its control.

When awarded CalFed monies, DBW intends to contract with environmental researchers to perform the proposed research activities. Non native species have major negative impacts on more desirable species in the system. The proposed project is compatible with several of the Ecosystem Restoration Program Goals set forth in by CalFed. By reducing the impact of an introduced species, this project can negate the effects of millions of dollars spent on habitat or ecosystem restoration.

I-020253

Egeria densa (Egeria, also known as Brazilian Elodea) is a nonnative submerged aquatic weed that grows throughout the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh. *Egeria* grows to a depth of approximately 12 feet. It forms dense mats of vegetation that causes a host of problems. It has grown and spread uncontrolled as a result of a number of factors, including ideal weather and hydrologic conditions and the lack of natural controls (e.g., competing species, herbivores and pathogens).

Egeria reproduces asexually (or vegetatively) through fragmentation. Fragmentation is the process where pieces of a parent plant are detached and grow separately into new individuals. A boat's propeller blade will cut Egeria and cause fragmentation. Heavy boat traffic in the Delta has facilitated *Egeria* fragmentation resulting in significant spread and increase of *Egeria*. *Egeria* mats are a hazard and nuisance because they can:

Displaces native vegetation
Upsets the balance of the aquatic environment
Eliminates, or hinders, boat and vessel traffic
Disrupts recreational activities such as water skiing, fishing, and swimming
Clogs agricultural irrigation intakes
Slows water conveyance, requiring increased pumping costs
Increases sedimentation
Degrades water quality

The Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh constitute a diverse and highly complex ecosystem. Numerous not yet understood ecological processes and relationships are present within this ecosystem. Implementing an aquatic weed control program in this area creates many difficulties and uncertainties. Consequently, the Department of Boating and Waterways (DBW) must employ a flexible program implementation strategy that can accommodate and respond to new information generated about the project area. The DBW believes that an adaptive management strategy provides the appropriate foundation for the *Egeria densa* Control Program (EDCP).

Adaptive management is a step-wise process where the DBW will test alternative methods for meeting project objectives and subsequently modify future actions, if necessary, to accomplish the program goals. When faced with uncertainties regarding ecosystem behavior, adaptive management will provide the DBW a systematic and analytical approach for developing the best system management option.

Adaptive management relies on the DBW identifying ecosystem indicators that measure ecosystem health and program efficacy. The DBW will monitor these indicators over time to assess positive and negative impacts caused by current management activities. If certain indicators show that a management activity produces an outcome inconsistent with program objectives, the activity is modified or suspended to produce a result more compatible with management goals.
Adaptive management uses an iterative approach to enacting ecosystem change. The DBW will conduct ongoing focused research to better understand processes and relationships driving the system. The DBW could then use focused research efforts to better direct subsequent management

activities.

Egeria control efforts will be built on Integrated Pest Management (IPM) and Maintenance Control (MC) Practices. IPM refers to the coordinated use of available control methods for a particular pest. MC practices minimize crop biomass through regular, low-level control treatments, applied to the weed at times during its life cycle when treatments are most effective. Employing both IPM and MC practices the Department of Boating and Waterways (DBW) will use combinations of mechanical and chemical control methods applied at particular times throughout the year in order to provide the greatest reduction in Egeria biomass and minimize impacts to the environment.

A key objective for the DBW is to develop a control method that is the most effective and the least environmentally damaging. To maintain this objective, the DBW must perform research on a number of aspects associated with the *Egeria densa* Control Program. It is this research that is the focus of this CalFed proposal. Some research topics that need to be addressed are: The ecological requirements of the invasive aquatic weed *Egeria densa*, and environmental fate of the chemicals proposed for its control. The research will be performed in a manner consistent with scientific methodology. All sampling and analytical procedures will be in accordance with EPA protocol.

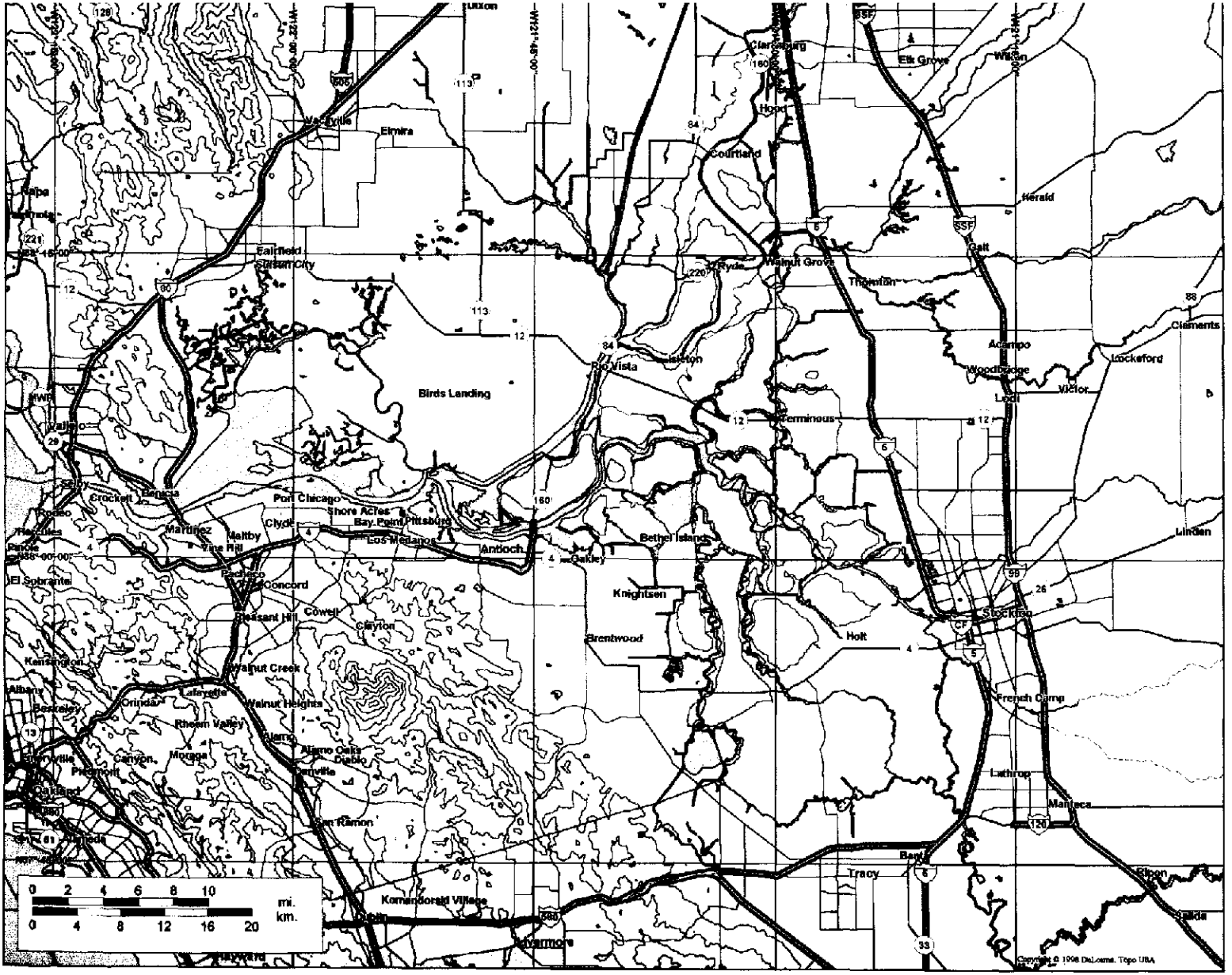
The equipment used in this research would vary. Most of the research would require the use of some type of boat. The DBW has a number of air-boats and propeller boats located at Paradise Point Marina in Stockton that could be used. Other research equipment would be purchased with money from the CalFed program.

Research for the *Egeria densa* Control Program would be ongoing. Each research project would have a certain time frame and would supply information to the project when available.

All research would be managed by an aquatic pest control supervisor and his staff. He has an in-depth understanding of the *Egeria densa* Control Program, and experience in research operations associated with the EDCP.

The EDCP project area includes the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh. The counties involved in the project area are: Sacramento, San-Joaquin, and Contra Costa. The DBW will use the legal definitions referenced below in determining the scope of the EDCP. Any research conducted for the EDCP would be within the area outlined below. A map showing the project area is included as an appendix.

- Sacramento-San Joaquin Delta- California Water Code Section 12220
- Suisun Marsh- California Public Resources Code Section 29100-29117



I-020256

I-020256

Ecological/Biological Objectives:

The primary objective of this project is to develop a research program to identify ecological requirements of the invasive aquatic nuisance weed *Egeria densa* including the environmental fate of chemicals proposed to control it.

Egeria densa is a perennial freshwater aquatic herb in the waterweed family (Hydrocharitaceae). In California, egeria occurs throughout the Sacramento/San Joaquin Delta. It has been distributed via the aquarium trade to many parts of the world where it has escaped cultivation and become naturalized. Once naturalized, it can spread along existing watercourses into new suitable habitats without further human activity (Parsons 1992). Egeria's dense underwater growth seriously retards water flow, interfering with irrigation projects, hydroelectric utilities and urban water supplies. It may also slow water traffic and interfere with recreational and commercial activities such as boating, swimming and fishing. Egeria reduces the abundance and diversity of native plant seeds and this is probably accentuated by increased sediment accumulation beneath the weed beds (deWinton and Clayton 1996).

There is an immediate need to establish this project to gain a better understanding of the ecological requirements of egeria, and to assist the Department of Boating and Waterways in its efforts to develop alternative ways by which to control this invasive plant, that are not, in themselves, environmentally harmful (goal 5, objective 9). A better understanding of egeria ecological requirements and the environmental fate of the chemicals currently proposed for the control of this plant, will help to address this goal.

A lack of natural controls such as those which may be found in its native habitat, have allowed these plants to flourish in Delta sloughs gaining a competitive advantage over native species. Invasive plants, such as egeria, are clogging many sloughs and waterways of the Delta, not only impeding boat traffic, but also creating environments that are unfavorable for native fishes and other wildlife species. Developing a research program focusing on the ecological requirements of Egeria and the fate of the chemicals proposed to control it in the Sacramento/San Joaquin Delta will help identify the means to reduce its adverse effects on native species, water quality and conveyance systems

In 1997, DBW began conducting a series of studies including the Effects of Control Methods on the *Egeria densa* Community, Estimating Acreage and Percent Coverage in the Sacramento/San Joaquin Delta, Fishes Associated with *Egeria densa* in the Delta, Dissipation and Movement of Chemicals Following Applications for Control of *Egeria densa* in the Delta, Production and Viability of *Egeria densa* Fragments Following Mechanical Harvesting, and Environmental Monitoring for Chemical Control of *Egeria densa* in the Delta. These studies were conducted as part of an Environmental Impact Report being prepared by DBW for the establishment of a Egeria densa Control Program.

Due to the demand to expedite the development of the program, the research results were based only on approximately a one year period.

The 1997 study estimating acreage and percent coverage in the Sacramento/San Joaquin Delta

identified 4000 acres of Egeria infestation. The number represents five percent of the total acres of waterways in the Sacramento/San Joaquin Delta and Suisun Marsh.

The proposed control program currently being developed, uses a integrated pest management approach using chemical control methods with supplemental harvests. It is anticipated that the majority of chemical applications will be with the copper based product Komeen. Although all the herbicides studied are currently registered for use in aquatic environments in California by the United States Environmental Protection Agency and the California Department of Pesticide Regulation, their has been a desire by regulatory agencies and environmental groups to explore the long term ecological impacts of both the plant and the fate of the chemicals proposed to control it.

A research program designed to address the ecological impacts of the growth of Egeria and the fate of the chemicals proposed to control it, will help to assess the population level of the plant and help identify ways to reduce its adverse effects on native species and ecological processes, water quality and conveyance systems.

The primary benefits of a research program will be to develop new methods to reduce the plants ability to directly or indirectly affect rare native species enhance the foodweb productivity, improve habitat for resident and anadromous fish, increase populations of desired fish and wildlife species and improve water quality and conveyance systems in major rivers and their tributaries. A research program will help develop new methods to reduce the plants ability to directly or indirectly affect rare native species. A secondary benefit may include the reduction of the impairment to fish protective devices such as fish screens at water conveyance systems.

The scientific hypothesis/questions to be evaluated through project are; Research of existing and new control methods will benefit and help CalFed meet its overall mission of developing a long term comprehensive plan that will restore ecosystem health and water management for beneficial uses of the Bay-Delta system by identifying the ecological requirements for and environmental impacts of the growth of egeria in the Sacramento/San Joaquin Delta and the environmental fate of the chemicals proposed to control it.

A key goal of CalFed is to have communities in which the dominant species are, as much as possible, native species. Research studies will allow DBW to gain a better understanding of the ecological requirements of, and to develop better control methods for the invasive species whereby increasing the habitat for native species. The result will be the restored ecological health and improved water management for the beneficial uses of the Delta.

Non native species have the capacity to damage the current ecosystem and to establish conditions that favor these species. The proposed research will explore ways to reduce the current growth rate of the non native species and to re- establish a balance in the ecosystem structure. Adaptive management uses an iterative approach to enacting ecosystem change. On going research will be conducted to better understand processes and relationships driving the system. Results will then be used to direct subsequent management activities.

This proposed project is not related to any other past or current CalFed phases or projects. The

Ecosystem Restoration Program Plan strategic objectives that the project addresses are found on pages 368-370 of Vol. I and page 111 of Vol. II and is identified as Target #1 Invasive Aquatic Plants.

This project will assist in the recovery of native at-risk species by restoring habitat identified in the ERP. By developing strategies whereby reducing the negative biological and economic impact of an established invasive non native species, it will enhance functunal habitat and ecosystem processes, improve water quality and water supply reliability.

The proposed research will complement the Department of Boating and Waterways Water Hyacinth Control Program, and the California Department of Food and Agriculture's Hydrilla Eradication Program.

Non native species have major negative impacts on more desirable species in the system. The proposed project is compatible with several of the Ecosystem Restoration Program Goals set forth in by CalFed. By reducing the impact of an introduced species, this project can negate the effects of millions of dollars spent on habitat or ecosystem restoration.

Technical Feasibility and Timing

The DBW is currently in the process of writing a programmatic environmental impact report for the *Egeria densa* Control Program. The "Project Description" (chapter 3, of the E.I.R) is 99% done and is going to be sent to the regulatory agencies within a few weeks. The DBW will then allow the regulatory agencies to review the document and make comments. These comments will then be incorporated into the document to finalize the report. All required permits will be obtained by the DBW prior to commencement of the EDCP.

Monitoring and Data Collection Methodology

The DBW performed field trials for their *Egeria densa* Control Program. From these trials came information on monitoring and data collection that could be used in future research projects. Each future research project would be unique and have its own monitoring and data collection methodologies. In general, U.S. Environmental Protection Agency (EPA) methods will be required for all water and sediment chemistry; EPA or American Society for Testing Materials (ASTM) recommended procedures will be required for all acute toxicity tests.

The DBW will work with individual researchers to make sure all research topics are in accordance with the above requirements and the research provides pertinent information that will be useful to the EDCP.

Table 1. Monitoring and Data collection Information

Biological/Ecological Objectives

Question to be evaluated	**Monitoring Paramenter &Data Collection Approach**	**Data Evaluation Approach**	**Comments/Data Priority**
Water flow	Pre-treatment using a florometer	Florometer	Excessive water flows will eliminate or postpone treatment
Chemicals in the water column	Pre-treatment & post-treatment as per EPA standards	Analyze for copper Diquat fast-test Sonar fast-test	
General water quality-dissolved oxygen	Pre & Post-treatment as per EPA standards	Hydrolab	For chemical applications
Chemicals in the sediment	Pre & post-treatment as per researcher protocols and EPA standards	Simultaneously extractable metals (SEM) method	Very important for copper based herbicides
Threatened and endangered Species	Pre-treatment for mechanical & chemical methods	Real-time monitoring & seasonal surveys	
Plant species of concern	Pre-treatment for mechanical harvesting	Site Surveys	
Threatened & endangered wildlife species	Pre-treatment for mechanical harvesting	Site Surveys	
Biomass sampling	Pre & post-treatment	As per researcher protocol	Important to determine program efficacy
Egeria fragment collection	Post-treatment for mechanical harvesting	As per DBW protocol	Important for mechanical harvesting

Local Involvement

The DBW sent notice of preparations (NOP's) to all the counties agricultural commissioners in the project area. Also, letters explaining our interest in the CALFED program were sent to the board of supervisors in counties involved in the proposed program. Copies of these letters are included for reference with this proposal.

As per CEQA guidelines, the DBW has been in contact with a number of other state and federal agencies, local organizations, and environmental groups. The DBW has received three responses from all the contacted groups. The Delta Keeper, Central Valley Regional Water Quality Control Board, and the Contra Costa Water District. Of these three groups, none were opposed to the program. The DBW has not received any opposition from landowners, facility owners, facility operators or other affected parties. The DBW will schedule public workshops when the draft EIR is complete and all the regulatory agencies have been notified.

Prior to any type of research that may use private land. The DBW will consult with the landowner to inform him or her that the DBW will be performing research on his or her property. This same procedure was followed in the DBW field trials with no opposition. If for some reason a landowner feels the presence of DBW on his or her land would be inappropriate, the DBW would not use his or her land.

Cost

The cost of the proposed research is based on prior research that was done for the EDCP trials. The trials were based on one time applications. The proposed research would be based on three years of applications. It is this type of research that the DBW could use to determine long term effects on *Egeria densa* treatments.

Table 2. Sample Total Budget (CALFED funds only) for 3 year program

TASK	DIRECT LABOR HOURS	DIRECT SALARY & BENEFITS	SERVICE CONTRACTS	MATERIAL AND ACQUISITION COSTS	MISCELLANEOUS AND OTHER DIRECT COSTS	OVERHEAD AND INDIRECT COSTS	TOTAL COSTS
Chemical analysis in water column	6,096 hrs.	$110,000	$265,000	$50,000	$15,000	$5,000	$500,000
Chemical in sediment	6,096	$455,000	$1,060,000	$200,000	$60,000	$5,000	$2,000,000
Study of Egeria Community	6,096	$133,000	$380,132	$60,000	$18,000	$5,000	$662,132
Toxicity-fish	6,096	$87,000	$212,000	$40,000	$12,000	$5,000	$400,000
Project Management Task	24,384	$437,868					$437,868

I-020263

Table 3. Sample Quarterly Budget - 3 YEARS

TASK	OCT-DEC 1999	JAN-MAR 2000	APR-JUN 2000	JUL-SEP 2000	OCT-DEC 2000	JAN-MAR 2001	APR-JUN 2001	JUL-SEP 2001	OCT-DEC 2001	JAN-MAR 2002	APR-JUN 2002	JUL-SEP 2002	OCT-DEC 2002
Chemical analysis in water	$41,667	$20,000	$63,334	$41,667	$41,667	$20,000	$63,334	$41,667	$41,667	$20,000	$63,334	$41,667	$41,667
Chemical in sediment	$166,667	$66,667	$266,667	$166,667	$166,667	$66,667	$266,667	$166,667	$166,667	$66,667	$266,667	$166,667	$166,667
Study of Egeria Community	$55,179	$25,000	$85,358	$55,179	$55,179	$25,000	$85,358	$55,179	$55,179	$25,000	$85,358	$55,179	$55,179
Toxicity-fish	$33,334	$20,000	$46,668	$33,334	$33,334	$20,000	$46,668	$33,334	$33,334	$20,000	$46,668	$33,334	$33,334
Project Management Task	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490	$36,490
TOTAL	$333,337	$168,157	$828,518	$333,337	$333,337	$168,157	$828,518	$333,337	$333,337	$168,157	$828,518	$333,337	$333,337

Applicant Qualifications

The office staff currently involved in the EDCP consists of an aquatic pest control supervisor with a background in biology and a detailed understanding of the EDCP. An aquatic pest control technician with a background in biology. An associate governmental program analyst with 3 years experience in the aquatic weed unit. And a secretary with 2 years experience in the aquatic weed unit.

The DBW will only hire qualified researchers with a interest in the project. All researchers will be screened for qualifications related to the projected research.

STATE OF CALIFORNIA-THE RESOURCES AGENCY
DEPARTMENT OF BOATING AND WATERWAYS
2000 EVERGREEN STREET SUITE 100
SACRAMENTO, CA 95815-3831
(916) 263-1331

County Board of Supervisors
Chairperson
Address
City, CA
Zip Code

Dear Chairperson,

This letter is to inform you that the California Department of Boating and Waterways is submitting a CALFED grant proposal application for research for the Department's Egeria densa Control Program. The DBW is currently involved in the writing of an Environmental Impact Report for the Egeria densa Control Program and the scope of the program includes your county as part of the Sacramento/San Joaquin Delta.

Attached for your information, is a copy of the Notice of Preparation that was sent out November 24, 1998.

Sincerely,

Patrick Thalken
Aquatic Pest Control Supervisor
(916) 263-8141

Attachment

STATE OF CALIFORNIA – THE RESOURCES AGENCY
PETE WILSON, Gover
DEPARTMENT OF BOATING AND WATERWAYS
1629 S STREET
SACRAMENTO, CA 95814-7291
(916) 445-6281

Notice of Preparation

To: Office of Planning and Research
1400 Tenth Street, Room 121
Sacramento, CA 95814

From: Department Of Boating and Waterways
1629 S Street
Sacramento, CA 95814-7291

Subject: **Notice of Preparation of a Draft Environmental Impact Report**

The Department of Boating and Waterways will be the Lead Agency and will prepare an environmental impact report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibility in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval for the project.

A brief description of the project, a map of the project location, and a map of estimated *Egeria* surface acre coverage in the Delta are contained in the attached materials.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but ***not later that 30 days*** after receipt of this notice.

Please send your response to Don Waltz or Patrick Thalken at the address shown above. We will need the name for a contact person in your **agency**.

Project Title Egeria densa Control Program

Date 11/24/98

Signature Carlton Moore

Title Carlton Moore, Interim Director
Telephone (916) 445-6281

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I-020267

Program Description

The Department of Boating and Waterways has been legislatively mandated to develop a control program for the nuisance aquatic weed *Egeria densa* in the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh (Assembly Bill 2193 Rainey). The Department intends to carry out this responsibility by establishing an ongoing mechanical and chemical maintenance control treatment program for the weed, with a goal of reducing plant biomass. Treatments will occur in locations determined by the Department to have *Egeria* infestations that are detrimental to vessel navigation. The Department will employ an adaptive management strategy for control of the weed that includes maintenance control efforts using an integrated pest management approach.

The Department will select control methods that are effective and economical, and pose the least significant impact to the environment. The methods chosen will be based on both historical literature and the most recent findings on *Egeria's* growth, distribution, and association with other aquatic organisms, in addition to forthcoming research information on the plant and its control. Both Department field staff and hired contractors will perform the control work.

Chemical control could consist of the application of one of three chemicals currently registered for the control of *Egeria* in California. DBW staff will apply chemicals at labeled rates in accordance with California State laws and regulations. Mechanical control methods may be implemented where economically practical, and in areas determined by the Department to be unsuitable for chemical application. Mechanical harvesting will be conducted by hired contractors in a manner established by the *Egeria densa* Task Force, a group comprised of representatives from various State and federal agencies and stakeholders.

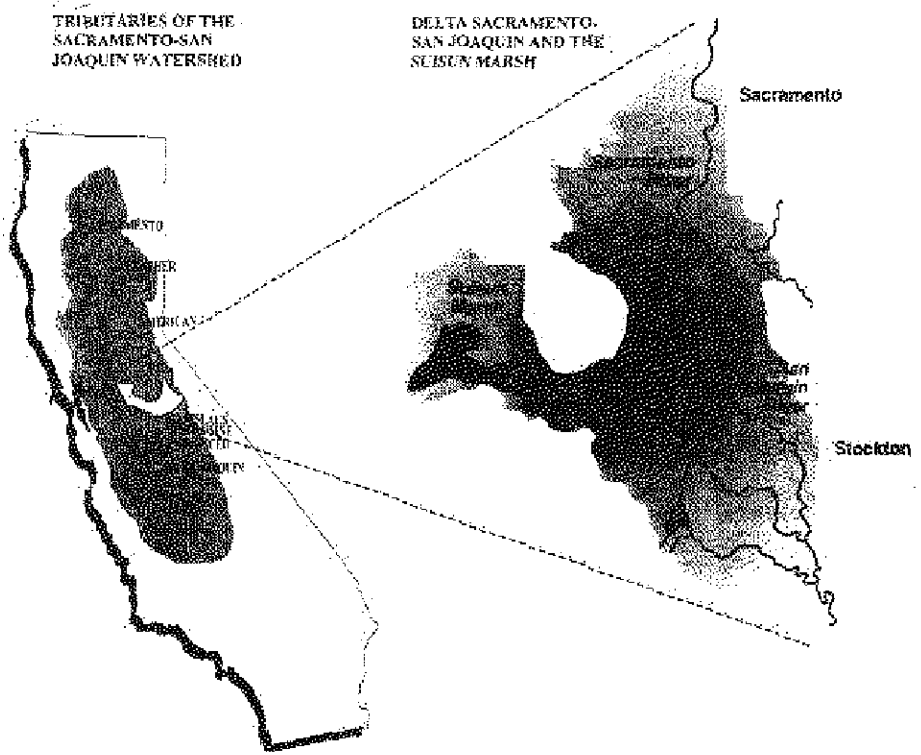
The method of weed control at each site will be determined by analyzing and evaluating biotic, abiotic, and human caused indicators that could affect treatment efficacy and have an impact on the environment. Indicators are features or attributes of the ecosystem that are expected to change over time in response to weed control practices implemented during the course of the *Egeria densa* Control Program. A long-term plan for controlling *Egeria* in the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh will include the evaluation of many indicators, either individually or in combination, that will affect the chosen method of treatment.

A program to monitor indicators and control methods will be implemented in order for the Department to observe weed control efficacy and impacts of treatment methods on the environment. The Department will continue to support ongoing research on *Egeria* control methods in order to develop control practices that offer increased efficacy and affordability with the least possible impact to the environment.

I-020268

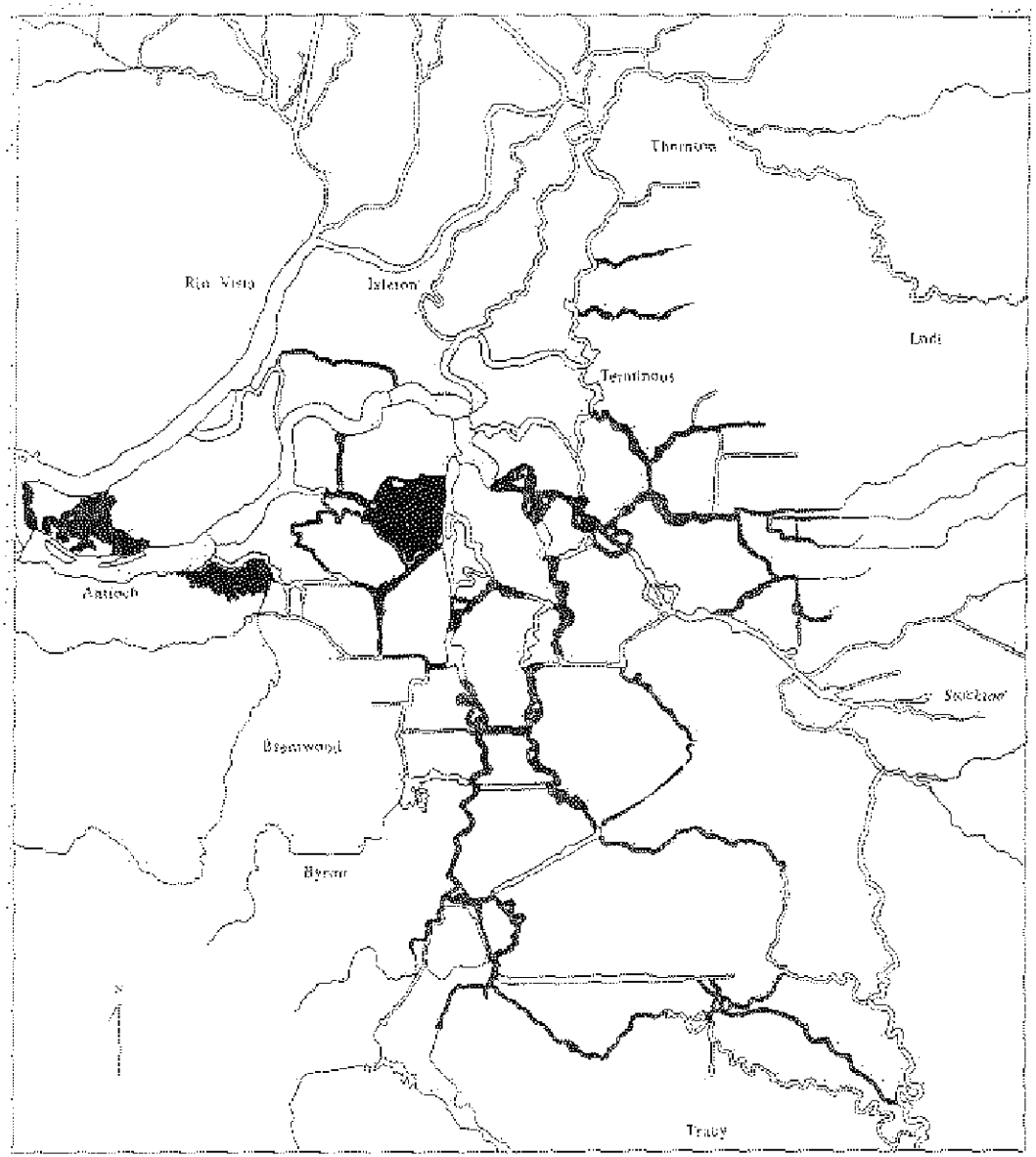
PROJECT LOCATION

The Legislature has declared that the growth of Egeria densa in the Sacramento-San Joaquin Delta, its tributaries, and the Suisun Marsh has occurred at an unprecedented level and that the resulting accumulations of Egeria densa obstruct navigation, impair other recreational uses of waterways, have the potential for damaging manmade facilities, and may threaten the health and stability of fisheries and other ecosystems within the delta and marsh.



I-020269

Rough Estimates of Percentages of Egeria Area Coverage



Percent of Egeria Area Coverage

- 5.0 ≤ 10.0
- 10.0 ≤ 20.0
- 20.0 ≤ 30.0
- 30.0 ≤

Notes: 9 sites not shown on map have 0 acres or missing data. The boundaries of colors represent the extent of the priority sites.

Sources: CDR Aerial Photographs flown 16 September 1997 at 1:24,000 scale and Sacramento-San Joaquin Delta Atlas by Department of Water Resources (1993).

0 1 2 3
Miles

I-020270

I-020270